Published in final edited form as:

Soc Sci Med. 2010 April ; 70(7): 1059–1069. doi:10.1016/j.socscimed.2009.12.017.

“Community attachment, neighborhood context, and sex worker use among Hispanic migrants in Durham, North Carolina, USA”

Emilio A. Parrado and Chenoa Flippen

Abstract

We build on social disorganization theory to formulate and test a hierarchical model of sex worker use among male Hispanic immigrants in the Durham, North Carolina area. The study considers both individual and neighborhood level dimensions of community organization as central factors affecting immigrants' exposure to sexual risks. At the individual level, we find support for the systemic model of community attachment, as time in the U.S. affects sex worker use, although the pattern is non-linear. At the neighborhood level we find that structural social disorganization, external social disorganization (or broken windows), and collective efficacy all correlate with sex worker use in the expected direction. In addition, we extend power-control theory to the community level to show that neighborhood gender imbalances are a central dimension of migrant men's heightened sex worker use, a factor not systematically considered in research on neighborhoods and health. When taken together, collective efficacy and gender imbalances stand out as central mediators between other dimensions of social disorder and sex worker use. Overall, we stress the importance of considering the neighborhood context of reception as an added dimension for understanding and improving immigrant health.

Keywords

U.S.; STD/HIV risks; migration; social disorganization; neighborhoods and health; Hispanics; USA; gender

There is increasing concern that migration contributes to the diffusion of sexually transmitted infections (STIs), including HIV (Mishra, Conner and Magana, 1996). Migration brings more and different people into contact, potentially acting as a bridge between low and high risk groups. Especially in the context of movement from less to more developed settings, cultural differences between places of origin and destination might encourage the adoption of sexual risk behaviors. At the same time structural characteristics of migration flows, such as the overrepresentation of young men, marginalization, poor economic conditions, and lack of access to social services could enhance migrants' exposure to health risks.

These issues are particularly salient for Latin American migration to the U.S., which has both increased dramatically in recent years and been accompanied by rising rates of STIs among U.S. Hispanics *and* residents of migrant sending communities abroad (CDC 2008a;

© 2010 Elsevier Ltd. All rights reserved.

Corresponding Author: Emilio A. Parrado, University of Pennsylvania, Philadelphia, PA UNITED STATES [Proxy], eparrado@sas.upenn.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Organista, Garcia de Alba, Moran and Carrillo, 1997; Magis-Rodriguez et al. 2009). The social forces exposing migrants to sexual risks are complex. Several studies have documented high rates of commercial sex worker (CSW) use among Hispanic migrants and elaborated on the individual level dimensions hypothesized to affect risks, including gender ideologies and lack of knowledge about HIV. More difficult to pinpoint, however, have been the structural conditions of the receiving context, including dimensions of community organization such as the neighborhood context of reception, that shape CSW use among migrants (Organista et al. 2004).

Accordingly, we build on social disorganization theories of immigrant adaptation and their extension in the literatures on crime and health (Kawachi and Berkman 2003; Robert 1999) to formulate and test a multi-level model of CSW use, which is both an important STI risk behavior and a general indicator of sexual health and adaptation, among Hispanic male migrants in the U.S. A central tenet of this approach is that risk behaviors result from the breakdown of community processes responsible for social control, rather than from migrants' personal traits. Community social organization influences CSW use on two levels. At the individual level dimensions of community attachment such as length of residency increase perceptions of commitment and foster the social bonds and networks responsible for healthier practices. At the neighborhood level, ecological properties distinct from the characteristics of individual residents affect communities' capacity to generate the informal channels of social controls that reduce risk behaviors.

We test this model using original data collected from 1,466 Hispanic male migrants in 32 apartment complex neighborhoods in the Durham-Carrboro-Chapel Hill area of North Carolina (referred to hereafter simply as "Durham," where the majority of respondents reside). We demonstrate that CSW use is directly connected with individual and neighborhood processes of community social organization. At the individual level, time in the U.S. alters immigrants' propensities to engage in commercial sex. At the neighborhood level a highly unbalanced gender composition, concentration of recently arrived and socially isolated individuals, and visible indicators of disorder such as littering are all associated with this form of heightened exposure to STI/HIV risk. As a result, CSW use concentrates in well defined areas of residence; identifying such neighborhoods can be a particularly useful strategy for the development of more targeted and cost-effective interventions that use neighborhoods as the unit of analysis and affect both the individual and contextual forces shaping migrant behavior.

Background

Between 1990 and 2000 over 8 million Latin Americans entered the U.S., doubling the number of foreign born Hispanics. The period also witnessed Hispanics' geographic dispersion to new areas of destination throughout the Southeast and Midwest. This rapid growth and dispersion raised concerns about immigrant adaptation and health risks, including STIs such as HIV. Estimates show that while Hispanics represented 15 percent of the U.S. population in 2006 they accounted for 18 percent of new HIV diagnoses and 19 percent of the people living with AIDS. Moreover, at 15 percent, the share of cases contracted via heterosexual transmission was more than twice the rate for NH-Whites. U.S. Hispanics are also overrepresented among those with other STIs; in 2006 the rate of newly diagnosed chlamydia, gonorrhea and syphilis cases were three, two, and ten times higher, respectively, than among NH-Whites (CDC 2008a, 2008b).

Heightened risk among Hispanics could be particularly acute among the foreign born, especially in new areas of Hispanic destination. In North Carolina the number of HIV infections among foreign born residents increased from 21 to 128 between 1998 and 2007,

and Hispanics represent 59 percent of infections diagnosed over the period (NC-DHHS, 2008). In addition, rates of chlamydia, gonorrhea, and syphilis for Hispanics in the State were far higher than among NH-Whites. There is evidence that CSW use is contributing to disease transmission. A report by the department of Health states: "The exchange of sex for drugs or money is commonly reported among high-risk heterosexuals with HIV and/or syphilis. ...Twenty-nine percent of men and women diagnosed with syphilis and interviewed from 2003-2007 reported exchanging sex for drugs or money; 11 percent of women interviewed with HIV and 21 percent of men reported exchange sex" (NC DHHS, 2008:34).

Moreover, research suggests that having numerous casual sexual partners is often associated with depression, low self-esteem, and other negative outcomes (Harris 2009). Thus the connection between migration and commercial sex is important in its own right, over and above its implications for STIs, as a measure of psychological well-being and adjustment (Laumann and Michael 2001; Michael 2004). The process of maintaining or rebuilding intimate ties after migration can be seen as part and parcel of the general process of immigrant adjustment, and thus subject to both the individual and neighborhood level mechanisms highlighted in social disorganization theories.

A number of studies have documented heightened CSW use among migrant Hispanics. Viadro and Earp (2000) found that 23 percent of married Mexican men in North Carolina reported a CSW as their most recent partner. Similar results are reported by Parrado and colleagues (2004). Among returned migrants in Mexico, Organista and colleagues (1997) found that 44 percent reported a commercial partner in the U.S. In a recent study in rural North Carolina, Knipper and colleagues (2007) report that 32.5 and 9.5 percent of unaccompanied and accompanied Hispanic men exchanged money, shelter, drugs, and/or alcohol for sex in the previous 3 months.

Moreover, this pattern does not appear to be a continuation of practices from communities of origin. National level studies from Mexico (Pulerwitz, Izazola-Lizea and Gortmaker 2001), for example, found that only 5 percent of men reported visiting a CSW in the past year. In a study comparing migrants and non-migrants, Parrado and Flippen (forthcoming) found that 48 percent of single migrant men engaged in commercial sex during the previous year compared to only 5 percent of their counterparts in communities of origin. Differences in sexual behavior across contexts also translated into different lifetime prevalence of STIs, as only 1.7 percent of single men in Mexico reported having had an STI compared to 6.8 percent among migrants (see also Hernández et al. 2007 and Martínez-Donante et al. 2005).

Previous research has made considerable progress in identifying the individual and household characteristics that influence migrant men's risk behavior. Some studies highlight that migration-induced family separation can lead to isolation and lack of social support, enhancing men's propensity to engage in risk behaviors (Magis-Rodriguez et al. 2009). Others elaborate on the role of social psychological dimensions related to gender inequalities, masculinity, and marital ideals in shaping migrant men's sexual behavior (Hirsch et al. 2007). At the aggregate level, researchers have also pointed out that the migrants' concentration in male dominated environments such as farm labor camps also enhances risk (Magis-Rodriguez et al. 2009).

While these studies have provided a rich description of the context in which commercial sex is situated, lack of comparable information across settings has prevented an empirical analysis of the impact of context on behavior. In addition, lack of survey data and small sample sizes has limited the capacity of prior studies to formulate statistical models that can differentiate the various roles of individual and structural sources of risk within an integrated framework. Our analysis builds on this prior literature but provides a more specific

elaboration of the contextual forces mediating the connection between migration and CSW use. We focus on a central but neglected dimension of contextual influence, the neighborhood context of reception. Thus, to our knowledge, this study is the first to describe and model cross-neighborhood variation in CSW use among Hispanic migrants, a strategy particularly fruitful for evaluating how particular contextual configurations can affect risk behavior.

Theoretical framework: Social disorganization and commercial sex

Our theoretical framework integrates classical social disorganization theory of immigrant adaptation with expectations derived from more recent developments and applications in the criminology and health literatures. Originally formulated to explain the experience of European migrants arriving to the U.S. at the turn of the century (Thomas and Znaniecki, 1920), social disorganization theory examines the structural consequences of migration for the social organization of communities and their implications for risk behaviors. Under certain conditions, migration can be a socially disorganizing experience that exposes migrants to unfamiliar rules and patterns of behavior and disrupts the socio-interactional processes that accounted for social cohesion in communities of origin. As a result, the social ills observed when people are placed in new contexts, such as alcoholism, depression, or family violence, are explained by variation in the absence or breakdown of the mechanisms responsible for social bonds and community attachment, rather than by cultural traits or imported patterns of behaviors.

Despite its close connection with the immigrant adaptation literature, further elaborations of the relationship between social disorganization and individual behaviors primarily came from the criminology literature. Social disorganization became more precisely defined as the inability of communities to achieve the common goals of their residents and maintain effective social control. Social organization is perceived in systemic terms, as the product of “a complex system of friendship and kinship networks and formal and informal associational ties” (Kasarda and Janowitz 1974: 329). This system of community attachment translates into informal and formal channels of social control responsible for the self-regulation of communities, which especially includes the behavior of young men (Bursik 1988; Kasarda and Janowitz 1974).

While much of the literature on social disorganization has focused on crime, it has a much wider utility and application; social control refers more generally to the capacity of groups to regulate their members according to desired and collective principles of well-being, which include health behaviors (Sampson et al. 1997). The main emphasis is on understanding the community processes that structure risk. While it is easy to view the social disorganization literature from a deficit perspective, focusing on what migrant communities lack rather than their strengths, this is not an inherent part of the theory. The central insight is the focus on variation in dimensions of social (dis)organization, rather than psychological or cultural traits, as undergirding individual risk behaviors. Not all migrant communities are disorganized and lacking in social networks. And migrants living in disorganized communities are also not lacking in agency and resources. However, the structure of social organization powerfully shapes migrants' lives and their ability to adapt to their new environment, and this structure has both individual and neighborhood levels dimensions.

At the *individual level*, social disorganization theory stresses the role of personal attachments, in particular length of residence, as a key factor affecting the social bonds regulating behaviors. Incorporating newcomers into the fabric of communities is an inherently temporal process; as length of residence increases, migrants become more enmeshed in the established networks and associational ties that regulate behavior (Kasarda

and Janowitz 1974). The main expectation is that risk behaviors in part result from the disruptions emanating from relocation to a new environment and should diminish with time, as social bonds are reconstructed.

As applied to sexuality, increased time in the U.S. would be expected to be associated with reduced CSW use among migrant men because it enhances social bonds, attachment to the community, and feelings of belonging (Parrado et al. 2004). Length of residence also affects the capacity of migrants to form more stable non-commercial sexual relationships. In addition to length of residence migrants' attachment to the local community can also be affected by their ability to speak English since it potentially expands their social networks and opens dating opportunities outside the Hispanic community.

At the *neighborhood level*, social disorganization theory highlights that macro, neighborhood level processes affect communities' ability to self regulate above and beyond the individual characteristics of their members (Sampson, Morenoff and Gannon-Rowley 2002). These factors are particularly pertinent for immigrants, especially Hispanics in new destinations, because they are not randomly distributed within metropolitan areas. Instead, they tend to cluster in well-defined neighborhoods that differ systematically from non-immigrant communities in their risk profiles. These neighborhood contexts of reception can have direct effects on CSW use. Drawing on a wide range of crime and health studies, we argue that 4 aspects of neighborhood context are particularly relevant for immigrant health behaviors: structural characteristics, physical disorder or "broken windows," collective efficacy, and gender composition.

First, in their classic study of the spatial distribution of crime across Chicago neighborhoods, Shaw and McKay (1942) identified three structural conditions that undergirded the spatial concentration and temporal continuity of risk across contexts: poor economic conditions, population turnover, and ethnic heterogeneity. These three structural conditions translate into social disorganization because they limit communities' ability to establish institutions oriented towards the common good, restrict the development of primary relationships that result in informal structures of supervision and support, and impede communication among local residents, obstructing attempts to define and reach common goals (Bursik 1988). These expectations have not only received substantial validation in the literature on crime but are also consistently found to be related to risk behaviors and health (Lee and Cubbin 2002; Sampson and Morenoff 2002).

Second, physical conditions in the local environment also link social disorganization and risk. In an influential article, Wilson and Kelling (1982) argued that minor incivilities and physical deterioration can contribute to more serious violent crime. Using the metaphor of "broken windows," this perspective highlights that an ambiance of disorder creates the impression that nobody is in control and that crimes can be committed. This includes elements of physical disorder such as graffiti, litter, broken windows, and general disrepair, and behavioral disorder such as public urination, unruly youth, or street prostitution. These conditions act as an invitation to deviance and contribute to the spiraling deterioration of urban neighborhoods, including a worsening of health conditions. Though the argument can be made that physical neighborhood conditions are more a reflection than a cause of social disadvantage (Harcourt 2001), public health research is also suggestive of a link between physical conditions and adverse outcomes. For instance, Wallace (1990) demonstrated that the spatial pattern of disease distribution, including HIV and tuberculosis, closely corresponds with variation in the extent of deterioration across inner city neighborhoods in metropolitan areas of the U.S. In addition, Cohen and colleagues (2003) demonstrated that neighborhood physical conditions such as boarded up housing also positively correlate with rates of gonorrhea and premature mortality.

Third, rather than focusing on external indicators of economic and physical deterioration, Sampson and colleagues have built on the concept of social capital and self-efficacy to postulate a theory of collective efficacy that captures the social interactional processes leading to healthy communities. Collective efficacy is defined as “social cohesion among neighbors combined with their willingness to intervene on behalf of the common good” (Sampson et al. 1997:918). According to this perspective, resources and networks translate into social control only to the extent that they combine with members’ willingness and perceived capacity to mobilize them. As such, the ability of neighborhoods to regulate public order depends in large part on conditions of social cohesion, trust, and solidarity among residents, elements that are likely to vary across immigrant receiving neighborhoods according to their degree of marginalization and isolation.

Several studies indicate that collective efficacy might be particularly relevant for understanding variation in sexual risks, especially among teenagers and young adults. In an early study, Aneshensel and Sucoff (1996) found that the association between low neighborhood socioeconomic status and adolescent depression was accounted for by low levels of neighborhood social cohesion. In a similar vein Browning and colleagues (2005) found that neighborhood collective efficacy delays sexual onset, especially for adolescents with lower levels of parental monitoring.

Finally, Hispanic immigrant communities, especially those in new areas of destination in the U.S., exhibit a highly unbalanced gender composition. The gender composition of communities has received little prior attention as a neighborhood dimension of health risk behaviors, although it has been highlighted as a confounding factor in studies of CSW use among migrant farm workers (Mishra et al. 1996). At the individual level, Hagan and colleagues (1985, 1988) have advanced a power-control theory of crime to account for gender differences in criminal involvement. Building on feminist perspectives, they argue that the gendered division of labor in male dominated societies means that women become more directly both the instruments and subject of social control than men. Particularly important for social control in immigrant communities, the socialization and control of children falls mainly under the purview of women, rendering them the primary instruments of social control within the family.

While it has not received a systematic treatment in the literature on neighborhood effects, we argue that this instrumental role of women also extends to local communities. Women’s presence in the neighborhood can contribute to a sense of family and community that might discourage men from participating in risk behaviors. A more balanced gender composition could be a resource that can trigger informal social controls and reduce risk practices such as CSW use. This could be especially applicable in the context of international migration since women often serve as a link between migrants and their communities and families of origin.

Taken together, these studies provide strong evidence of the importance of variation in neighborhood social organization for health outcomes and behavior, yet they have not been applied to the original focus of social disorganization theory, immigrants. Moreover, the effect of neighborhood gender composition and its relation to other contextual effects on immigrants’ sexual risk has not been tested, in spite of its recognized importance in contemporary migration flows. Accordingly, we analyze the impact of these 4 aspects of neighborhood context, i.e. structural characteristics, physical disorder or “broken windows,” collective efficacy, and gender composition, on CSW use among migrant men.

Research setting and data

The Durham area is a particularly interesting setting to examine the link between social disorganization and risk behaviors. The high tech boom in the nearby research triangle

fueled rapid growth in the area in recent decades. The demand for workers in construction and service industries grew accordingly, prompting a rise of the Hispanic population from less than 1 to 9 percent of the total population between 1990 and 2000.

The recency and rapidity of growth are evident in the demographic composition of the Hispanic community. Data from the 2000 Census shows that nearly 75 percent of Hispanics in the area are foreign born, with more than 85 percent migrating to the United States after 1990. Not surprisingly, the vast majority are undocumented, exhibit relatively low levels of English fluency, and are concentrated in low-skill employment. Like many areas of new migrant destination the gender composition of the Hispanic population is highly uneven (Suro and Singer, 2002), with more than 2 men aged 20 to 29 for every like-aged woman. As a result, a relatively well-developed sex industry has developed around areas of Hispanic concentration. Street-walking CSWs solicit in areas where migrants congregate and a number of brothels operate in and around apartment complexes with large numbers of unaccompanied male migrants. Groups of CSWs also frequent male-dominated apartments complexes soliciting men gathered in common areas or searching out former clients (Cravey, 2003; Parrado, Flippen, and Uribe forthcoming).

Data

Data for the analysis come from 1,466 face-to face interviews (collected in 2 phases, from 2002-2003 and 2006-2007) with Hispanic male immigrants residing in 32 apartment complexes in Durham, NC.¹ The female component of the project is not discussed here, largely because the main source of STI risk in the community is via men's sexual behavior. We collected data on drug use and the use of syringes, including needle sharing. The former was relatively uncommon and the latter virtually non-existent among local migrants. In addition, less than 1.5 percent of male respondents reported sexual experience with other men. We therefore concentrate on commercial sex, the most commonly reported behavior associated with STIs.

The relatively recent development of the Durham Hispanic community required special considerations to approximate a representative sample (Smith and Furuseth 2004). Our study relied heavily on Community Based Participatory Research (CBPR), which uses a critical theoretical perspective that includes the "local theory" of community participants as collaborators in the research process (Israel et al. 2005). In our case, a group of 14 Hispanic men and women from the community were directly involved in every stage of the research, including formulation and revision of the questionnaire, identification of survey locales, and development of strategies to guarantee the collection of meaningful information. In addition, the CBPR group was trained in survey methods and conducted all interviews. The group was instrumental in allowing us to reach the still nascent Hispanic community and in ensuring the quality of the information collected. The CBPR group helped us to achieve a refusal rate of 10.7 percent, a figure that compares favorably with those reported in other studies of recent migrants (Parrado et al. 2005). In addition, regular group meetings were used to discuss results and to gain culturally grounded interpretations for the analyses.

We followed targeted random sampling techniques to approximate a representative sample of the Durham Hispanic community. Based on CBPR discussions and field work in the community we identified 35 apartment complexes and blocks and 13 trailer parks that house large numbers of migrant Hispanics. We then conducted a census of all the apartments in these areas to construct a sampling frame and randomly selected individual units to be visited by interviewers. Interviews were conducted with the person who answered the door,

¹Ethical oversight was provided by the institutional review boards of Duke University and UNC Chapel Hill.

if eligible. Otherwise this person was asked if anyone fitting the eligibility criteria lived in the apartment, and that person was asked to complete the interview. Other methods of randomly selecting an individual within the housing unit (for instance, interviewing the person with the most recent birthday) were deemed unlikely to be effective given the context of extreme mistrust and fear of strangers and the fact that many men do not necessarily know the personal histories of all of their co-residents.

Overall, our sampling procedure resulted in 1,522 face-to-face interviews with migrant Hispanic men ages 18 to 49 years in the Durham, NC area. For the purposes of this analysis we limit our sample to the 1,466 surveys conducted in 32 neighborhoods where at least 10 immigrant Hispanic men were interviewed.

One advantage of our targeted design is that the areas of Hispanic concentration used for sampling closely approximate theoretical conceptualization (rather than the more common administrative definition, such as census tracts) of neighborhoods. While specific formulations vary, there is consensus that a neighborhood involves both a spatially identifiable environment separate from the larger context and a concentration of interactional processes among residents that results in norms and expectations about behaviors that are grounded in the local area (Entwisle 2007). In our case, the sampling units have precise boundaries that allow their residents to identify them by name and represent a spatially bounded environment where people develop friendships and recreate during the weekend. As discussed above, it is this spatial and interactional configuration that also serves to concentrate risk factors for STI/HIV in some neighborhoods more than others.

Analytical strategy and model specification

The dependent variable in our analysis is self-reported CSW use in the previous year in Durham. Following our theoretical framework explanatory variables include both individual and neighborhood level indicators. Individual level variables include measures of socioeconomic background such as age, years of education, and wages, as well as an indicator of marital status. In recognition of the complex relationship between marriage and migration, we distinguish between single men, accompanied married men (who reside with a spouse), and unaccompanied married men (whose wives continue to reside in their communities of origin). Following the systemic model of community social organization we include two measures of attachment, time in the area and English language ability.

Neighborhood level constructs follow our theoretical discussion and include three indicators of structural position that correspond to Shaw and McKay's poor economic conditions, population turnover, and ethnic heterogeneity. Specifically, we aggregated individual level data within each neighborhood to calculate median wages and the share of migrants who were recently arrived (i.e., with less than 3 years in the Durham area). In addition, data on race and ethnicity was collected on all randomly selected apartment units, regardless of whether they were eligible for interview. We used this information to calculate the share of the apartment complex population that is not Hispanic.

External indicators of social organization follow the physical and behavioral aspects highlighted in the broken windows perspective and include: the share of apartments that are vacant; a dummy variable for whether the police or private security forces are sometimes visible in the complex; and a littering index that sums interviewers' assessments of the presence of beer bottles outside the apartments, cigarettes butts on the ground, trash and glass outside the apartments, abandoned cars in the complex, and boarded up apartments. These figures were calculated from periodic systematic observations of the physical and social environment of the apartment complexes that were conducted by interviewers (Sampson and Raudenbush, 1999). In addition, we include the log of the number of crimes

reported to the police during 2007 within a 0.25 miles radius of the neighborhood, based on data from the Durham Police Department (<http://www.durhampolice.com/crimemapper.cfm>).

Because collective efficacy requires social cohesion and trust, it depends on the interconnectedness of residents. Social isolation, understood as lack of trust and support, is the opposite of connectedness and cohesion, and we therefore use it as a proxy for deficient collective efficacy. Our social isolation measure is computed as the average number of times that residents reported not having anyone that: would listen or support them; they trust; knows how things work in the U.S.; could help with errands; and could provide them with transportation (items in the questionnaire were summed and the average taken across neighborhoods). Finally, our measure of gender balance is the share of Hispanic apartments with at least one female resident.

The empirical analysis first describes individual level variation in prevalence of CSW use and socioeconomic characteristics. We next conduct a description of neighborhood level conditions. To facilitate the presentation of results and highlight the concentration of social disorganization dimensions we conduct a common factor analysis of our neighborhood level characteristics that reduces the multiple indicators to a single social disorganization factor that we then use to group apartments according to 5 levels of risks, from very low to very high. We use these clusters to describe the neighborhoods and map the results to illustrate the spatial distribution of neighborhood disadvantages in the Durham area.

The second part of the analysis models the role of both individual and neighborhood level indicators of CSW use among Hispanic immigrants. Since the clustering of respondents within neighborhoods violates the independence assumption in standard regression, we formulate a 2-level Hierarchical Logit model that takes the following form,

$$\begin{aligned}\text{Level-1: } \log[P/(1-P)]_{ij} &= \beta_{0j} + \beta_{qj} X_{qij} \\ \text{Level-2: } \beta_{0j} &= \gamma_{00} + \gamma_{0s} Y_{sj} + \mu_{0j}\end{aligned}$$

where P_{ij} is the probability of CSW use in the previous year for respondent i in apartment complex j ; β_{0j} is an intercept term, X_{qij} are individual-level covariates q with β_{qj} parameters to be estimated. The level-1 intercept (β_{0j}) is modeled at level-2, where γ_{00} is an intercept, Y_{sj} are neighborhood-level covariate s for apartment complex j associated with γ_{0s} coefficients, and μ_{0j} is a random effect (see Raudenbush et al. 2004). In substantive terms, by estimating the intercept in level 2, this model captures the role of neighborhood level mechanisms in affecting propensity for CSW use above and beyond individual characteristics. Descriptive results and statistical models were weighted to account for the differential likelihood of inclusion within each apartment complex.

Descriptive results: Individual and neighborhood level variation in CSW use and social disorganization

Table 1 reports descriptive statistics for the individual level indicators in our analysis. The average Hispanic immigrant in the area is nearly 30 years-old, has 7.6 years of education, and earns \$14 hourly. Less than 40 percent of migrant men are married and residing with their spouse; the vast majority are unaccompanied, either single (39 percent) or married but residing without their spouse (22 percent). The average duration of residence in the Durham area is less than 4.4 years, only 64 percent of migrant men reported speaking any English, and a scant 8 percent reported speaking English well or very well.

Nearly 22 percent of migrant Hispanic men reported CSW use in the previous year in Durham. On average migrants reported visiting CSWs 6.7 times (s.d. 8.4) during the past year, with 16 percent of those involved in commercial sex doing so once a month or more. As could be expected, vaginal sex was reported as a quasi universal practice with CSWs, although a handful reported only oral sex. In addition, 26 percent reported usual or sporadic oral sex and only 5 percent reported occurrences of anal sex. The vast majority of migrants reported having visited a Latina CSW (85%) but 37 and 18 percent reported sex with white and black CSWs, respectively. In terms of avenues for the encounters, 44 percent reported mainly using the services of CSWs who visit the apartments where migrants reside; 45% reported visiting brothels or “casas de citas”; and a non-trivial 8% reported mainly or sometimes using the services of street walking CSWs.

Condom use is high, but not universal, in the commercial sex setting as 92% of migrants reported having always used condoms with CSWs. The impetus for condom use emanates from both the client and the CSW; 13 percent of men indicated that condom use was initiated exclusively by the CSW and 54 percent indicated that it was initiated by both. However, 7 percent of men reported asking the CSW to have sex without a condom and there is variation in the prevalence of condom use by CSW type, with more structured encounters, such as brothels, resulting in greater condom compliance while less structured settings such as apartment visiting and street walking CSWs allowing more room for negotiation. It is telling that 14 percent of migrant men whose last visit was with a street walking CSW reported not using a condom during that encounter.

Overall, the prevalence of CSW use varies dramatically across our 32 apartment complexes. Figure 1 illustrates these differences. Estimates show that the percentage of men reporting CSW use varies from 0 to 46 percent across the 32 complexes. Only 9 apartment complexes are appreciably above the individual average in CSW use, while 18 complexes report below average rates of commercial sex.

These aggregate disparities in CSW use occur against a background of considerable variation in central aspects of social organization. Table 2 summarizes our neighborhood level indicators across all neighborhoods and across clusters of neighborhoods with different levels of social disorganization. As discussed in the methods section, the clusters were constructed from a common factor analysis of our social disorganization indicators. We used the predicted factor scores to specify 5 groups of apartments ranging from very low to very high degrees of social disorganization. Factor loadings (not reported but available upon request) are defined as follows: very low includes complexes with a factor score of .75 or above; low between .25 and .75; medium between -.25 and .25; high between -.75 and -.25; and very high -.75 or lower.

Indicators of structural social disorganization show that residents of apartments with low levels of social disorganization earn on average 2 dollars more per hour than residents of apartments with very high levels of disorganization (\$11 vs. \$9). In turn, the share of neighborhood residents who are recently arrived is far higher in highly disorganized neighborhoods (57 percent) than in neighborhoods with a low level of disorganization (35 percent). The opposite applies to the share of residents that is non-Hispanic that ranges from 33 to 11 percent across social disorganization levels.

Our indicators of external social disorganization, including vacancy, littering, and crime, do not vary as systematically according to level of social disorganization. Only the presence of police or security in the complex increases along with concentrated risks, reflecting the fact that many high risk areas are the target of police control. While the sources of this police presence are complex and beyond the scope of the current analysis, an important impetus

was requests from within the community itself for greater protection from the frequent robberies and assaults committed against immigrant Hispanics, who have a reputation for carrying cash due to a mistrust or lack of access to mainstream financial institutions.

Our indicator of collective efficacy, social isolation, is related to concentrated disadvantage in a curvilinear fashion. The average isolation score is low (1.2) among complexes with very low levels of disorganization, intermediate (1.7) among medium risk complexes, and lowest (1.1) among complexes with very high levels of social disorganization. In other words, social support and contacts are common at very low and very high levels of risk but less common in the middle. That isolation would be low in complexes with low levels of disadvantage is not surprising given the greater share of families and more established migrants there. However, many areas that are particularly disadvantaged on other dimensions are actually relatively rich in social networks and support. This phenomenon is illustrated in the Durham's point-of-entry communities which are known for taking in newcomers and where it is common for numerous men to share apartments and provide free room and board to newly arrived migrants while they get established. Relatively high in social support such as ride sharing and assistance finding employment, these neighborhoods also tend to concentrate disorder such as public drinking, a dearth of women and families, and littering, thus resulting in the rather paradoxical pairing of high levels of support and disorder.

This pattern is also supported by the trend in gender composition of the neighborhoods across levels of disadvantage. The share of Hispanic households with a female resident is less than half (49 percent) in highly disorganized neighborhoods, relative to 74 percent in neighborhoods with low levels of disorganization.

To illustrate the spatial distribution of these disadvantages within the Durham area, Figure 2 maps the neighborhood levels of disadvantage in conjunction with block level Hispanic composition. Larger circles reflect higher levels of concentrated disadvantage. At first glance, the concentration of social disorganization appears more or less randomly distributed across the area. Consistent with the recent formation of the community and the decentralized mode of development in Durham, Hispanic neighborhoods are dispersed rather than spatially contiguous, and as such do not form larger ecological areas of concentration. However, while geographically dispersed, the concentration of social disorganization across neighborhoods follows the historical development of the Hispanic community in Durham. The five very highly disadvantaged neighborhoods identified in the analysis include the first Hispanic neighborhoods established in the area. Interestingly, these neighborhoods continue to concentrate recently arrived migrants suggesting a temporal as well as spatial continuity in the concentration of disorganization.

Multivariate results: Individual and neighborhood processes connected with use of CSWs

Table 3 reports results from our hierarchical logit model predicting likelihood of CSW use. Model 1 includes only individual level predictors to more directly test the prediction that migrants' attachment to the local community reduces risk behavior. Results show that likelihood of CSW use varies with age in a slight curvi-linear fashion, slowly increasing at early ages, peaking at around age 35 and then declining. However, it is not connected with other basic socio-demographic background characteristics such as years of education and hourly wages. Not surprisingly, CSW use is strongly influenced by marital status, with accompanied married men being 94 percent ($1 - (\exp(-2.815))$) less likely to report visiting a CSW than single men. However, it is important to note that the behavior of unaccompanied

married men is not statistically different from that of single men, a factor that highlights the potential for the diffusion of STIs/HIV from the United States to Latin America.

Model 1 also supports predictions from the systemic model of community attachment since time in the U.S. is associated with the likelihood of CSW use. However, we find that the relationship is non-linear and that a cubic specification for years in the U.S. better fits the data. To illustrate the association, we calculated predicted probabilities of reported CSW use for an average single Hispanic immigrant in Durham according to time in the area. Estimates show that CSW use is relatively low during the first year in Durham (27 percent), grows steadily to a peak of 46 percent during the fourth year, and then declines slowly, not falling below those registered during the first year until roughly 10 years in the area. These findings hold even after neighborhood level characteristics are accounted for in subsequent models.

A number of factors contribute to this curvilinear pattern. Migrants often arrive to the area with the expectation of rapid capital accumulation and quick return to their communities of origin, especially those separated from their wives. At the same time, they arrive in debt from their crossing and dependent on family or friends for room and board. This no doubt puts a damper on all forms of discretionary spending immediately after arrival (see also Parrado et al. 2004). With time a more realistic picture of the likely duration of family separation often emerges, financial constraints are lessened, and access to information on the sex industry improves, all of which encourage CSW use. It is only after several years that migrant men are able to build the deeper social bonds and connections that can expand their ability to find sexual partners outside the commercial setting. In addition, a growing sense of attachment and feelings of belonging likely triggers the search for more permanent, intimate relationships. While only suggestive, the findings qualify the simple linear expectations from the systemic model of community attachment. The disruptive effect of migration appears to span several years during which sexual risks actually increase. The other indicator of community attachment, namely whether the migrant speaks some English, shows no association with CSW use.

Models 2 through 5 test the association between neighborhood characteristics and CSW use incrementally adding structural, “broken windows,” collective efficacy, and gender dimensions. Model 2 shows that structural social organization is indeed associated with risk behaviors although not always in the expected direction. As predicted, CSW use is higher in neighborhoods with a greater share of recent arrivals; a one percentage point increase in the proportion of recently arrived Hispanic immigrants in the neighborhood increases the likelihood of CSW use by 14 percent ($\exp(.014)$).

Contrary to expectations, ethnic heterogeneity, as measured by the size of the non-Hispanic population, is somewhat negatively associated with CSW use. Each percentage point increase in the proportion of non-Hispanic residents decreases the likelihood of CSW use by 2 percent ($1 - \exp(-.017)$). This result runs counter to the idea that ethnic solidarity facilitates the formation of social bonds and cooperation necessary to reduce deviance, and instead reflects the marginalized position of migrants and their disproportionate concentration in disadvantaged areas. In particular, the uneven gender composition of migrant communities encourages the growth of the commercial sex industry, which has long targeted areas where migrants congregate (Mishra et al. 1996). In this context, residence in a neighborhood with a more balanced ethnic composition reflects a higher level of integration to the U.S. that reduces exposure to health risk behaviors. Supporting this interpretation, accounting for neighborhood gender composition as a control to Model 2 renders insignificant the effect of recently arrived and non-Hispanic neighborhood composition on CSW use (results not reported).

Model 3 tests the role of indicators associated with the broken windows hypothesis on risk behavior. Results show that two factors are associated with CSW use but again not necessarily in the expected direction. The regular presence of police or private security forces in a community is associated with a higher likelihood of CSW use, suggesting that police/security presence is more a response to social disorganization than an immediate source of social control. At the same time, our littering index positively correlates with CSW use, supporting the expectation that small incivilities that signal an overall lack of control and community investment are associated with other risk behaviors.

Model 4 assesses the effect on CSW use of collective efficacy, as measured by our indicator of neighborhood social isolation. Results show that social isolation does in fact correlate with risk behavior but the effect is better captured by a curvilinear specification. Again, to better illustrate the association we estimated predicted probability of CSW use for single men according to their neighborhood collective efficacy. Estimates show that the likelihood of CSW use is 18 percent among residents of neighborhoods with the lowest level of social isolation (0.4), increases as isolation rises, and peaks at 41 percent when social isolation reaches 1.6. It then declines slightly to 36 percent when social isolation is highest (2.0). It is important to note though, that even though the effect is curvilinear the decline at high levels of isolation is modest. At low levels of isolation, men are more integrated into families and networks of support that facilitate the formation of non-commercial relationships, reducing the risk of commercial sex. Conversely, at very high levels of neighborhood isolation communication about how to access CSWs is probably inhibited, contributing to lower levels of risk behavior. It is at more intermediate levels where men are most at risk; information on CSWs is readily available, the greater sense of anonymity reduces the internal motivation for regulating behavior, and there are few non-commercial outlets to alleviate the often profound loneliness that commonly plagues unaccompanied migrants.

And finally, Model 5 tests the association between neighborhood gender composition and CSW use. Consistent with our extension of power-control theory, results show that a more balanced gender composition is strongly associated with reduced risk behaviors. A one percentage point increase in the proportion of Hispanic households with a female resident decreases the likelihood of CSW use by 2 percent ($1 - \exp(-.018)$). If we apply this figure to the range of gender compositions in our sample, this implies that in the most uneven neighborhoods where women are present in only 31 percent of households *single* men's probability of CSW use is 49 percent; in the most balanced neighborhoods where 94 percent of households include female residents, single men's likelihood of CSW use is 24 percent, or less than half that of their counterparts in the most unbalanced neighborhoods.

Three main processes contribute to this effect, all connected with the particular dynamics of the migrant-targeted sex industry. First, men express feeling the need to show respect to "decent" women by not engaging in non-normative behavior in their presence, representing an important form of internalized social control. Second, women tend to be the main link connecting migrants with family members and communities of origin. As a result, women's presence tends to reduce the anonymity prevalent in male-dominated neighborhoods and raise the potential negative consequences of engaging in risk behaviors. The potential for information to cross gender lines could also enhance migrants' efforts to conform to social labeling expectations. Finally, the behavior of CSWs themselves also contributes to the impact of gender balance on behavior, as they tend to focus their efforts on male-dominated environments that concentrate unaccompanied migrants. Not only are they more likely to find business in these neighborhoods, they are also less likely to elicit conflict with resident women.

Much of the discussion about neighborhood effects, however, revolves around identifying the interactional processes that translate into risk prone contexts. One major difficulty is that the different dimensions of social disorganization are highly correlated and thus their independent effect is difficult to assess. This difficulty is evident in the results from Model 6 that includes all neighborhood level indicators. Estimates show that practically all of the neighborhood level characteristics affecting CSW use in previous models become statistically insignificant once all dimensions are considered simultaneously. The proportion of Hispanic households with a female resident is the exception as it maintains marginal statistical significance.

To further investigate which aspects of disorder acts to mediate the effect of other aspects of disorganization, we tested the extent to which various neighborhood characteristics affected CSW use controlling for gender composition. The results, shown in Model 7, indicate that only collective efficacy exerted an independent effect on CSW use above and beyond the effect of gender composition. These two dimensions, gender and collective efficacy, are the main mechanisms connecting neighborhood conditions and health risks.

Conclusions

Our paper builds on social disorganization theory to formulate and test a hierarchical model of CSW used among male Hispanic immigrants in the Durham, NC area. The study considers both individual and neighborhood level dimensions of community organization as central factors shaping immigrants' exposure to health risks. At the individual level, we build on the systemic model of community attachment to assess the role of time in the U.S. and English ability in structuring CSW use. At the neighborhood level the study investigates the role of three dimensions that have received differential attention in theories connecting local communities and risk: structural social disorganization, external social disorganization (or broken windows), and collective efficacy. In addition, we extend power-control theory to the neighborhood level and test the role of gender imbalances on the risk behaviors of immigrant men.

Overall we find strong support for the relevance of social disorganization for understanding variation in CSW use among migrants. We find that the likelihood of CSW use varies in conjunction with accumulated time in Durham, though not in a linear fashion as a simple systemic model of community attachment would seem to apply. While CSW use increases during the first years after migration as migrants gain financial resources, it peaks around year four, and then declines slowly over time in conjunction with the development of social bonds and attachments. However, additional time in Durham alone is an ineffective remedy for this type of risk behavior as it takes roughly 10 years in the community for CSW use to fall to the relatively low level registered during the first year after arrival.

Moreover, indicators of structural social disorganization, such as the share of the community who are recent migrants, are also positively associated with CSW use. The same applies to the neighborhood concentration of Hispanic migrants as it tends to overlap with the concentration of single men. Two of our indicators of external social disorganization derived from the broken windows perspective, namely police/security presence and littering, also positively correlate with CSW use.

Collective efficacy, in turn, also relates to risk behaviors; individuals in neighborhoods with higher degree of isolation are statistically more likely to engage in commercial sex. Finally, we document the importance of an additional element of neighborhood context not systematically assessed in the literature on context and health behaviors, specifically local gender composition. This is particularly salient among immigrant communities since the

over-representation of men at the neighborhood level is also positively associated with CSW use.

Taken together these findings highlight that risk behaviors are not randomly distributed in the Durham area, instead they appear to vary systematically according to properties of the neighborhood context of reception. Disorder and social disorganization are not necessary outcomes of migration, but rather result from the particular structure of the migrant flow and the context of reception. Migrants engage in a number of coping strategies upon arrival and work assiduously to recreate networks of social support in their new environment. However, these efforts can be strongly facilitated or undermined by the neighborhoods they find themselves in.

More broadly though, another implication of our analysis is that it is very difficult to separate the independent role of the different dimensions of neighborhood social disorganization because they are highly correlated. Incorporating all indicators into a single model eliminates the independent contribution of many of the theoretical dimensions. Two dimensions stand out, however, as being more directly related to CSW use, namely collective efficacy and neighborhood gender composition.

It is important to point out, though, that these findings are potentially affected by the sorting of individuals into particular neighborhoods. If unobserved characteristics affect residence in particular neighborhoods they might bias the association between context and sex worker use. This caveat, while important, tends to be less problematic for our population of relatively recent arrivals. The point of entry for migrants is largely a matter of networks and connections; people move in with family or gravitate to neighborhoods where it is common to take in newcomers. At least in the short term, it is difficult to move because new arrivals are dependent on co-residents for information and, more importantly, transportation. Migrants whose networks connect them to neighborhoods populated overwhelmingly by unaccompanied men find themselves in a remarkably different environment than those whose networks take them to communities with more women and families. Right after arrival some migrants find themselves surrounded by a high degree of social disorder in an environment closely connected to a well-organized sex industry. With few sources of social control to countervail these forces, CSW use and other adverse health behaviors like alcohol abuse are far more common. Regardless, we cannot completely rule out the possibility that some other unmeasured characteristic shapes both the propensity to locate in certain types of neighborhoods and the propensity to visit CSWs.

Results also offer insights that can be applied to public health. We argue that the challenge facing current public health programs is to move beyond individualistic approaches and address the social milieu in which migrants operate, improving neighborhood conditions and affecting the structural impediments to positive sexual adaptation in the U.S. This is not to argue that traditional outreach programs are ineffective. While we did not present data on the subject, AIDS knowledge in the community is actually quite high, no doubt due to both aggressive health outreach work in Durham and public information campaigns within Mexico. The same can be said about the high prevalence of reported condom use in the commercial sex setting, which has been directly affected by information campaigns targeting both migrants and CSWs. However, even with these programs and services in sending and receiving communities, risk factors remain acute in certain neighborhoods.

To the extent that historically constructed neighborhoods function as the port of entry for recently arrived immigrants, concentrating disadvantage and structural risk factors, targeting them could be particularly efficacious in efforts to reduce disease transmission. Efforts made to improve the physical and social conditions in these communities would potentially lessen

health risk behaviors directly, by ameliorating the conditions of disorder that encourage CSW use, and indirectly by making the areas more amenable to residence by women and children, which is also associated with lower risk.

Our findings also underscore the role of immigration policy in shaping migrant health behaviors. Immigration reform is a topic that elicits considerable controversy and conflict; in recent years, federal policies in the U.S. have focused on border enforcement, which has made crossing the border more dangerous and family reunification more difficult. Given the importance of women to men's sexual risk behavior, our findings strongly suggest that these types of policies undermine the sexual health of migrant receiving communities and contribute to the relatively high rates of STIs among migrant men, which also have negative implications for their partners.

Theoretically, these findings underscore that a social disorganization approach that pays particular attention to processes of community attachment and neighborhood variation in gender and collective efficacy could be fruitfully applied to other aspects of migrant health and functioning. Studies of the impact of immigration on alcohol consumption, depression, or domestic abuse could all potentially benefit from the application of this framework.

Acknowledgments

The project was funded by NIH grant #R01-NR-008052. We would like to thank the Durham Hispanic community for their willingness to participate in the study, and our entire CBPR group for their insights and dedication to the project. We would also like to acknowledge former colleagues and graduate students Chris McQuiston, Leonardo Uribe, Amanda Philips Martinez, and Claudia Ruiz.

References

- Aneshensel CS, Sucoff CA. The neighborhood context of adolescent mental health. *Journal of Health and Social Behavior*. 1996; 37:293–310. [PubMed: 8997886]
- Browning CR, Leventhal T, Brooks-Gunn J. Sexual initiation during early adolescence: The nexus of parental and community control. *American Sociological Review*. 2005; 70:758–778.
- Bursik, Robert. Social Disorganization and Theories of Crime and Delinquency: Problems and Prospects. *Criminology*. 1988; 46:519–552.
- Centers for Disease Control and Prevention. 2006 Disease Profile. U.S.; Atlanta: 2008a. http://www.cdc.gov/nchhstp/Publications/docs/2006_Disease_Profile_508_FINAL.pdf
- Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report, 2006. U.S.; Atlanta: 2008b. <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/2006report/pdf/2006SurveillanceReport.pdf>
- Cohen, Deborah A.; Farley, Thomas A.; Mason, Karen. Why is poverty unhealthy? Social and physical mediators. *Social Science & Medicine*. 2003; 57(9):1631–1641. [PubMed: 12948572]
- Cravey, Altha. Toque una ranchera, por favor. *Antipode*. 2003; 35:603–621.
- Diez-Roux AV. Investigating neighborhood and area effects on health. *American Journal of Public Health*. 2001; 91(11):1783–1789. [PubMed: 11684601]
- Entwisle, Barbara. Putting people into place. *Demography*. 2007; 44(4):687–703. [PubMed: 18232206]
- Hagan, John; Gillis, AR.; Simpson, John. The class structure of gender and delinquency: Toward a power-control theory of common delinquent behavior. *American Journal of Sociology*. 1985; 90:1151–1178.
- Hagan, John; Gillis, AR.; Simpson, John. Feminist scholarship, relational and instrumental control and a power control theory of gender and delinquency. *British Journal of Sociology*. 1988; 39:301–336. [PubMed: 3179640]
- Harcourt, Bernard E. *Illusion of Order: The False Promise of Broken Windows Policing*. Harvard University Press; Cambridge: 2001. 2001

- Hernandez, MT.; Sanchez, MA.; Aoki, B.; Ruiz, JD.; Magis, C.; Bravo Garcia, E.; Samuel, MC.; Lemp, G. Epidemiology of HIV and STI among Mexican Migrants in California; Presented at: The Fourteenth Conference on Retroviruses and Opportunistic Infections; Los Angeles, California. February 2007; 2007.
- Hirsch, Jennifer S., et al. They “Miss more than anything their normal life back home”: Masculinity and extramarital sex among Mexican migrants in Atlanta. *Perspective on Sexual and Reproductive Health*. 2007; 41:23–32.
- Israel, Barbara; Eng, E.; Schulz, A.; Parker, E., editors. *Methods in Community-based Participatory Research for Health*. Jossey-Bass; San Francisco: 2005.
- Kasarda, John; Janowitz, Morris. Community Attachment in Mass Society. *American Sociological Review*. 1974; 39:328–39.
- Kawachi, Ichiro; Berkman, Lisa F. *Neighborhoods and Health*. Oxford University Press US; New York: 2003. 2003
- Knipper, et al. Condom use among heterosexual immigrant Latino men in the Southeastern United States. *AIDS Education and Prevention*. 2007; 19(5):436–447. [PubMed: 17967113]
- Laumann, Edward O.; Michael, Robert T., editors. *Sex Love and Health in America: Private Choices and Public Policies*. University of Chicago Press; Chicago: 2001.
- Lee RE, Cubbin C. Neighborhood context and youth cardiovascular health behaviors. *American Journal of Public Health*. 2002; 93:428–436. [PubMed: 11867325]
- Michael, Robert T. Sexual Capital: An Extension of Grossman’s Concept of Health Capital. *Journal of Health Economics*. 2004; 23/4:643–652. [PubMed: 15587691]
- Magis-Rodríguez, Carlos, et al. Migration and AIDS in Mexico: An Overview Based on Recent Evidence. *Journal of Acquired Immune Deficiency Syndromes*. 2004; 37:S215–S226. [PubMed: 15722864]
- Magis-Rodríguez, et al. Going North: Mexican migrants and their vulnerability to HIV. *Journal of Acquired Immune Deficiency Syndromes*. 2009; 51:S21–S25. [PubMed: 19384097]
- Martínez-Donante, Ana P., et al. HIV infection in mobile populations: the case of Mexican migrants to the United States. *Pan American Journal of Public Health*. 2005; 17(1):26–29. [PubMed: 15720878]
- Mishra, S.; Conner, RF.; Magana, RJ., editors. *AIDS Crossing Borders: The Spread of HIV among Migrant Hispanics*. Westview Press; Boulder, CO: 1996.
- North Carolina, Department of Health and Human Services. *Epidemiologic Profile for HIV/STD Prevention and Care Planning*. Raleigh, North Carolina: 2008. www.epi.state.nc.us/epi/hiv
- Organista KC, Garcia de Alba JE, Moran MA, Carrillo H. Survey of condom-related beliefs, behaviors, and perceived social norms in Mexican migrant laborers. *Journal of Community Health*. 1997; 22(3):185–198. [PubMed: 9178118]
- Organista KC, Carrillo H, Ayala G. HIV Prevention with Mexican Migrants: Review, Critique, and Recommendations. *Journal of Acquired Immune Deficiency Syndromes*. 2004; 37:S227–S239. [PubMed: 15722865]
- Parrado, Emilio A.; Flippen, Chenoa A. Migration and Sexuality: Mexican Men and Women in Contextual Perspective. *Journal of Social Issues*. Forthcoming.
- Parrado, Emilio; McQuiston, Chris; Flippen, Chenoa. Participatory Survey Research: Integrating Community Collaboration and Quantitative Methods for the Study of Gender and HIV Risks among Hispanic Migrants. *Sociological Methods and Research*. 2005; 34:204–239.
- Parrado, Emilio A.; Flippen, Chenoa A.; McQuiston, Chris. Use of Commercial CSWs among Hispanic Migrants in North Carolina: Implications for the Spread of HIV. *Perspectives on Sexual and Reproductive Health*. 2004; 36(4):150–156. [PubMed: 15321781]
- Parrado, Emilio A.; Flippen, Chenoa; Uribe, Leonardo. Concentrated Disadvantages: Neighborhood Context as a Structural Risk for Latino Immigrants in the US. In: Haour-Knipe, Mary; Aggleton, Peter; Thomas, Felicity, editors. *Dangerous Liaisons?: Mobility, Sexuality and AIDS*. Forthcoming
- Pulerwitz J, Izazola-Lizea J, Gortmaker SL. Extrarelational sex among Mexican men and their partners’ risk of HIV and other sexually transmitted diseases. *American Journal of Public Health*. 2001; 91:1650–1652. [PubMed: 11574329]

- Raudenbush, Stephen W.; Bryk, Anthony S.; Cheong, Yuk Fai; Congdon, Richard T., Jr. HLM 6: Hierarchical Linear and Nonlinear Modeling. Scientific Software International, Inc.; Lincolnwood, IL: 2004.
- Robert, Stephanie A. Socioeconomic position and health: The independent contribution of community socioeconomic context. *Annual Review of Sociology*. 1999; 25:489–516.
- Sampson RJ, Raudenbush SW, Earls F. Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science*. 1997; 277:918–924. [PubMed: 9252316]
- Sampson RJ, Raudenbush SW. Systematic social observation of public spaces: A new look at disorder in urban neighborhoods. *American Journal of Sociology*. 1999; 105:603–651.
- Sampson, Robert J.; Morenoff, Jeffrey D.; Gannon-Rowley, Thomas. Assessing “Neighborhood Effects”: Social Processes and New Directions in Research. *Annual Review of Sociology*. 2002; 28:443–478.
- Shaw, Clifford R.; McKay, Henry D. *Juvenile Delinquency and Urban Areas*. University of Chicago Press; Chicago: 1942.
- Smith, Heather A.; Furuseth, Owen J. *Latinos in the New South: Transformations of Place*. Ashgate Publishing, Ltd.; 2006. 2006
- Suro, R.; Singer, A. Latino growth in metropolitan America: Changing patterns and new location. Center on Urban and Metropolitan Policy and the Pew Hispanic Center; 2002. Report
- Thomas, William I.; Znaniecki, Florian. *The Polish Peasant in Europe and America*. Gorham Press; Boston: 1920.
- Viadro, Claire; Earp, Jo Anne. The sexual behavior of married Mexican immigrant men in North Carolina. *Social Science and Medicine*. 2002; 50:723–35. [PubMed: 10658852]
- Wallace R. Urban desertification, public health and public order: ‘planned shrinkage’, violent death, substance abuse and AIDS in the Bronx. *Social Science & Medicine*. 1990; 31(7):801–813. [PubMed: 2244222]
- Wilson JQ, Kelling GL. Broken windows: the police and neighborhood safety. *Atlantic Monthly*. 1982; 249:29–38.

Figure 1. Prevalence of CSW use across neighborhoods

Figure 2. Geographical distribution of neighborhood disadvantage in Carrboro/Durham, NC

Table 1
Individual level variation in prevalence of sex worker use and socioeconomic characteristics

Sex Worker Use in Past Year (%)	22.0	
Socioeconomic and demographic background		
Age	29.8	(7.9)
Years of education	7.6	(3.2)
Hourly wages	14.3	(58.1)
Family status (%) (reference single)		
Married	39.7	
Married without spouse	22.3	
U.S. social bonds and attachments		
Years in Durham	4.4	(3.5)
Speaks Some English (%)	64.2	
N	1466	

Standard deviations in parenthesis

Table 2
Neighborhood level variation in social disorganization

	All	Degree of social disorganization				
		Very low	Low	Medium	High	Very high
Structural social disorganization						
Median wages	9.9 (1.0)	11.0 (0.8)	9.9 (0.9)	9.8 (1.3)	9.7 (0.5)	8.9 (0.7)
Percent recently arrived	45.4 (12.0)	35.0 (3.1)	36.2 (11.5)	45.1 (10.0)	52.2 (7.2)	57.3 (11.0)
Percent non-Hispanic	20.5 (12.7)	32.9 (13.1)	22.5 (12.8)	16.8 (6.6)	18.0 (11.6)	11.1 (9.2)
External social disorganization						
Percent vacant	13.5 (9.9)	6.7 (5.3)	20.2 (11.7)	8.2 (3.6)	11.0 (6.9)	21.2 (12.0)
Police/Security in complex	0.5 (0.5)	0.0 (0.0)	0.3 (0.5)	0.3 (0.5)	0.8 (0.4)	1.0 (0.0)
Littering index	2.0 (1.6)	0.7 (1.0)	2.7 (1.8)	2.5 (1.7)	1.8 (1.2)	2.4 (2.2)
Number of Crimes	138.3 (129.0)	108.2 (87.2)	205.4 (242.1)	163.0 (69.6)	90.4 (51.2)	156.2 (78.2)
Collective efficacy						
Mean social isolation	1.4 (0.5)	1.2 (0.7)	1.5 (0.5)	1.7 (0.5)	1.4 (0.5)	1.1 (0.4)
Gender balance						
Percent female	61.0 (15.6)	74.3 (19.1)	73.0 (8.7)	56.7 (6.8)	52.6 (9.6)	48.5 (12.6)
N	32	6	7	4	10	5

Standard deviations in parenthesis

Table 3

Hierarchical logit model assessing the connection between social disorganization and sex worker use (standard errors in parenthesis)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	-1.818 ** (0.727)	-3.274 ** (1.030)	-2.660 ** (0.960)	-3.211 * (0.648)	-0.933 (0.943)	-3.672 (1.269)	-2.084 ** (0.913)
Socioeconomic and demographic background							
Age	0.071 * (0.039)	0.074 * (0.040)	0.079 * (0.042)	0.074 * (0.040)	0.079 * (0.040)	0.082 * (0.040)	0.081 ** (0.040)
(squared)	-0.001 * (0.001)	-0.001 * (0.001)	-0.001 * (0.001)	-0.001 * (0.001)	-0.001 * (0.001)	-0.001 * (0.001)	-0.001 * (0.001)
Years of education	-0.026 (0.026)	-0.030 (0.027)	-0.023 (0.026)	-0.027 (0.027)	-0.022 (0.026)	-0.022 (0.026)	-0.022 (0.026)
Hourly wages	-0.008 (0.006)	-0.008 (0.006)	-0.007 (0.005)	-0.009 (0.006)	-0.007 (0.005)	-0.008 (0.006)	-0.007 (0.005)
Family status (reference single)							
Married	-2.815 ** (0.208)	-2.817 ** (0.211)	-2.831 ** (0.205)	-2.792 ** (0.208)	-2.795 * (0.208)	-2.795 ** (0.212)	-2.780 ** (0.209)
Married without spouse	-0.279 (0.175)	-0.307 (0.177)	-0.303 (0.170)	-0.275 (0.169)	-0.327 (0.176)	-0.334 (0.178)	-0.326 (0.176)
U.S. social bonds and attachments							
Years in Durham	0.480 ** (0.130)	0.460 ** (0.134)	0.464 ** (0.131)	0.474 ** (0.128)	0.459 ** (0.133)	0.453 ** (0.135)	0.455 ** (0.134)
(squared)	-0.079 ** (0.022)	-0.075 ** (0.023)	-0.076 ** (0.023)	-0.079 ** (0.022)	-0.075 ** (0.023)	-0.074 ** (0.023)	-0.075 ** (0.023)
(cubed)	0.003 ** (0.001)	0.003 ** (0.001)	0.003 ** (0.001)	0.003 ** (0.001)	0.003 ** (0.001)	0.003 ** (0.001)	0.003 ** (0.001)
Speaks Some English	-0.055 (0.149)	-0.026 (0.150)	-0.043 (0.142)	-0.065 (0.141)	-0.040 (0.145)	-0.018 (0.148)	-0.041 (0.141)
Structural social disorganization							
Median wages		0.109 (0.097)				0.122 (0.093)	
Percent recently arrived		0.014 ** (0.005)				0.005 (0.006)	
Percent non-Hispanic		-0.017 * (0.010)				-0.007 (0.007)	
External social disorganization							
Percent vacant			0.004 (0.006)			0.005 (0.005)	
Police/Security in complex			0.331 ** (0.149)			0.175 (0.163)	
Littering index			0.092 ** (0.034)			0.052 (0.035)	
Number of Crimes (log)			0.041 (0.087)			0.028 (0.081)	
Collective efficacy							
Mean social isolation				2.190 ** (1.053)		0.707 (1.216)	1.631 * (0.907)
(squared)				-0.761 ** (0.391)		-0.214 (0.458)	-0.570 * (0.337)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Gender balance							
Percent female					-0.018** (0.006)	-0.010* (0.006)	-0.016** (0.005)

* p < .10
** p < .05